

replace mechanical relays. In fact, by means of radio tubes it should be possible to build a circuit such that the current to the heater varies inversely as the reflective quality of the mirror. Then as moisture begins to appear

on the mirror the heat applied to it will increase and the temperature of the mirror will be maintained continuously at the dew point, or at a level that bears a constant relation to it.

NOTES AND REVIEWS

W. J. HUMPHREYS. *Physics of the Air*. 3d edition. New York (McGraw-Hill Book Co.), 1940. 676 pp., 226 figs.

In the revision of this standard treatise, care has been taken not to alter the character or scope of the book. It remains a complete treatment of all types of physical phenomena in the atmosphere—thermodynamic, dynamic, electrical, acoustic, and optical—discussed from the physical point of view and, so far as possible, on an exact mathematical basis, but easily understandable by any reader who is familiar with elementary calculus and general physics; it is in general limited to the physical explanations of the phenomena, including but little descriptive meteorology and only occasional and incidental references to the working procedures of practical and applied meteorology or forecasting. The purpose of the book is to provide the reader with the sound foundation of scientific understanding of atmospheric phenomena in general that everyone engaged in any type of either practical or the-

oretical meteorological work should have; and although, since the appearance of the first edition, several other books on physical and dynamical meteorology have been published, there still is no other one treatise of like character and equally comprehensive scope in any language.

In this new edition, the type has been entirely reset, so that no restrictions were imposed on the character of the revisions. Deletions, modifications and additions occasioned by the advances in meteorological knowledge during the past 12 years have been freely introduced in large numbers throughout the work; but no extensive rewriting was necessary. One of the most striking changes from the preceding edition is the section on conditions in the very high atmosphere, pp. 75–78. Many of the former illustrations have been replaced by new ones based on later data. The revisions have increased the size of the book by about 20 pages.

METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR NOVEMBER 1940

[Climate and Crop Weather Division, J. B. KINCKEL in charge]

AEROLOGICAL OBSERVATIONS

By EARL C. THOM

The mean surface temperatures were below normal over most of the country during November (chart I), with mean temperature from 8° to 10° F. lower than normal in the northern portion of the Rocky Mountain Plateau region. Temperatures were slightly above normal for the month in most of the extreme eastern portion of the country, as well as along the Gulf coast and along the Pacific coast southward from central Oregon.

At the 1,500 m. level the directions of the resultant winds at most stations were south of normal for the month. The opposite turning occurred over the New England States, the Great Lakes and over the Central Appalachian region as well as over a small area in the west central part of the country. As will be noted from chart IX none of the pilot-balloon stations located along the Pacific coast, in the North Central States, or in the northeastern part of the United States had 10 or more 5 a. m. balloon observations which reached the level of 3,000 m. Except at Atlanta, Ga., the direction of the resultant winds were south of the normal direction at the 3,000 m. level for all stations for which this comparison was made. At 5,000 meters the direction of the 5 p. m. resultant wind was slightly north of the corresponding 5 a. m. normal for the month at Billings, Mont., while the direction of the 5 p. m. resultant wind at Omaha, Nebr., agreed with the morning normal for the month. At no other stations in the northern half of the country did 10 or more 5 p. m. balloon observations reach 5,000 meters during the month (see chart X). In the southern half of the country the directions of the 5 p. m. resultant winds were north of the corresponding 5 a. m. normals along the Pacific coast and were south of these normals to the eastward.

The 5 a. m. resultant velocities at 1,500 meters were lower than normal for the month, except that small positive departures occurred in the extreme northwest and in

a narrow strip in the east central and south central parts of the country. At the 3,000 m. level 5 a. m. resultant velocities were below normal over the northern half of the Rocky Mountain Plateau and were above normal to the east and south of this area. As noted above, the 5 a. m. resultants at 3,000 meters were not available this month for a considerable part of the country. Resultant velocities observed at 5 p. m. were above the corresponding 5 a. m. normals for the month at 5,000 meters at all stations for which such data were computed. The afternoon resultant velocities at this level were generally much higher than the a. m. normals, the largest positive departure, 14.7 m. p. s., being observed at St. Louis, Mo.

The agreement between the mean surface temperature and the shift in the direction of the resultant from normal that had been apparent for several past months was not in evidence in November at any of the three lower levels, 1,500 meters, 3,000 meters, or 5,000 meters.

At the 1,500 m. level the directions of the 5 p. m. resultant winds were north of the direction of the corresponding 5 a. m. winds over the southeast and the Gulf coast, were south of the morning winds over the northeast and north central regions and showed no well defined tendency over the rest of the country. As noted before, a number of pilot-balloon stations did not have 5 a. m. resultants computed this month for the 3,000 m. level. Data available, however, would indicate a tendency of the direction of the resultant wind to shift to the southward during the day at this level over the central and west central parts of the country with no well-defined tendency over other areas.

The 5 p. m. resultant velocities for the month were higher than the corresponding 5 a. m. velocities at 1,500 meters along the Pacific coast and the northern half of the Atlantic coast and were lower than the morning velocities over most of the remainder of the country. At 3,000 meters the increases and decreases in resultant velocity from 5 a. m. to 5 p. m. were well distributed.